

CLAIMS:

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1. A multilayer record carrier provided with at least two substantially parallel information layers (6, 8) and suitable to be scanned by a single scanning device (10), wherein data is written in units of data blocks on tracks of said at least two information layers, a first guard field being written at the start of a data block and a second guard field being written at the end of said data block,

characterized in that

1 said first and second guard fields have lengths such that the end position of said second guard field of a preceding data block is located within the area of said first guard field of a succeeding data block.

2. A record carrier according to claim 1, wherein the lengths of said first and of said second guard field are selected such that those parts of said first and of said second guard field which do not overlap each other have a predetermined minimum length.

3. A record carrier according to claim 1, wherein a predetermined preamble pattern is written between said first guard field and said data block, and a predetermined postamble pattern is written between said data block and said second guard field.

4. A multilayer record carrier provided with at least two substantially parallel information layers (6, 8) and suitable to be scanned by a single radiation beam generated by a scanning device (10), wherein data is written in units of data blocks on tracks of said at least two information layers (6, 8), a first guard field being written at the start of a data block and a second guard field being written at the end of said data block, characterized in that

5 said first and said second guard field have a predetermined minimum length which is approximately equal to the sum of half the diameter of the radiation beam in the upper one of said at least two information layers (6, 8) when focussed on the lowest one of said at least two information layers (6, 8), and a maximum allowed misalignment between the two information layers.

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Derived
from 10~ 1/2 beam diameter D₀

SUB 15. A record carrier according to claim 1 or 4, wherein said first and said second guard field contain dummy data for overwriting previously recorded data.

5 6. A record carrier according to claim 4, wherein said length of said first and of said second guard field is equal in said at least two information layers (6, 8).

7. A record carrier according to claims 4, a gap portion provided between said second guard field and a header area succeeding said second guard field and/or between said first guard field and a header area preceding said first guard field, wherein the length of the gap portion is greater than or equal to said predetermined minimum length. > min

8. A record carrier according to claim 7, wherein said length of said gap portion is equal in said at least two information layers (6, 8).

9. A multilayer record carrier provided with at least two substantially parallel information layers (6, 8) and suitable to be scanned by a single scanning device (10), said information layers comprising information areas comprising prerecorded information, characterized in that the information areas on the first information layer are aligned to the information areas on the second information layer.

10. A record carrier according to claim 9, wherein said information areas are header areas.

11. A method for recording data on a multilayer recording carrier (1) provided with at least two substantially parallel information layers (6, 8), said method comprising

- a) a first writing step of writing the data in units of data blocks on tracks of said at least two information layers (6, 8), and
- b) a second writing step of writing a first guard field at the start of a data block and writing a second guard field at the end of a data block;

characterized in that the method further comprises

- c) a setting step for setting the lengths of said first and of said second guard field such that the end position of said second guard field of a preceding data block is located within the area of said first guard field of the succeeding data block.

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12. A method according to claim 11, wherein said setting step is performed such that those parts of said first and of said second guard field which do not overlap each other are set to have a predetermined minimum length.

13. A method for recording data on a multilayer record carrier (1) by scanning the record carrier by a single radiation beam, said record carrier provided with at least two substantially parallel information layers (6, 8), said method comprising

a) a first writing step of writing said data in units of data blocks on tracks of said at least two information layers (6, 8), and

b) a second writing step for writing a first guard field at the start of a data block, and a second guard field at the end of a data block;

characterized in that the method further comprises

c) a setting step for setting the length of said first and of said second guard field to be greater than or equal to a predetermined minimum length which is approximately equal to the sum of half the diameter of the radiation beam in the upper one of said at least two information layers (6, 8) when focussed on the lowest one of said at least two information layers (6, 8), and a maximum allowed misalignment between the two information layers.

14. A method according to claim 11 or 13, further comprising the step of writing dummy data into said first and said second guard field.

15. A method according to claim 13, further comprising the step of setting said length of said first and of said second guard field to be equal in said at least two information layers (6, 8).

16. A method according to claim 13, the record carrier comprising a gap portion provided between said second guard field and a header area succeeding said second guard field and/or between said first guard field and a header area preceding said first guard field, the method further comprising the step of setting the length of the gap portion so as to be greater than or equal to said predetermined minimum length.

17. A method according to claim 16, further comprising the step of setting said length of said gap portion to be equal in said at least two information layers (6, 8).

18. A recording apparatus for recording data on a multilayer record carrier (1) provided with at least two substantially parallel information layers (6, 8), said apparatus comprising:

5 a) a recording unit (10) for writing said data in units of data blocks on said multilayer record carrier (1), wherein a first guard field is written at the start of a data block and a second guard field at the end of a data block, and

b) control means (36) for controlling said recording unit (10) so as to write said data blocks and said first and second guard fields on tracks of said at least two information layers (6, 8),

10 characterized in that said recording unit (10) is driven so as to write said first and said second guard fields with a length such that the end position of said second guard field of a preceding data block is located within the area of said first guard field of the succeeding data block..

19. A recording apparatus for recording data on a multilayer record carrier (1) provided with at least two substantially parallel information layers (6, 8), said apparatus comprising:

a) a radiation source (11) for generating a radiation beam,

20 b) a recording unit (10) for writing said data in units of data blocks on said multilayer record carrier (1), wherein a first guard field is written at the start of a data block and a second guard field is written at the end of a data block, and

c) control means (36) for controlling said recording unit (10) so as to write said data blocks and said first and second guard fields on tracks of said at least two information layers (6, 8),

25 characterized in that said recording unit (10) is driven so as to write said first and said second guard fields with a length greater than or equal to a predetermined minimum length which is approximately equal to the sum of half the diameter of the radiation beam in the upper one of said at least two information layers (6, 8) when focussed on the lowest one of said at least two information layers (6, 8), and a maximum allowed misalignment between the two information layers.

20. A method of manufacturing a multilayer record carrier (1) provided with at least two substantially parallel information layers (6, 8), comprising the step of performing an

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alignment of said at least two information layers (6, 8) by measuring and aligning alignment marks at predetermined measuring points (M1 to M6).

21. A method according to claim 20, further comprising the step of performing
5 said measurement and alignment optically by using a camera device.

22. A method according to claim 20, wherein said alignment marks are header areas provided on said at least two information layers (6, 8).

10 23. A method according to claim 22, wherein said header areas are arranged to form header spokes, and said measuring points comprise a first point (M2) located on an inner diameter and a second point (M2) located on an outer diameter of a single header spoke and third point (M3) located on a spoke arranged at an angle of 90° with respect to said single header spoke.

15 24. A method according to claim 22, wherein said header areas are arranged to form header spokes, and said measuring points comprise a first point (M4) and a second point (M6) located at the outer diameters of two opposite header spokes and a third point (M5) located on a spoke arranged at an angle of 90° with respect to said two opposite header
20 spokes.

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